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动物分类学报

A NEW SPECIES OF THE GENUS *NEANISENTOMON* (PROTURA, EOSENTOMATA, EOSENTOMIDAE) FROM SHAANXI, CHINA

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Abstract *Neanisentomon shaanicum* sp. nov. from Shaanxi Province, China is described in the paper. It is characterized by the absence of sensilla *b'*-1 and *c'* on foretarsus, with extremely long sensillum *d*, the chaetotaxy of urotergites Ⅴ - Ⅵ (8/16) absent of seta *A*3 and Ⅶ (6/16) absent of setae *A*1 and *A*3 and the female squama genitalis with distinct duck-head like caput processus. The updated key to the genus *Neanisentomon* is also presented.
Key words Protura, Eosentomidae, *Neanisentomon*, new species, China.

1 Introduction

The genus *Neanisentomon* Zhang and Yin, 1984 is characterized by the absence of sensilla *e* on foretarsus, willow-leaf shaped or spatulated *t*-2 and *f*-1 and the chaetotaxy of urotergite Ⅷ (6/8), seta *Pc* lacked. Up to now, only three species of *Neanisentomon* were described which are all endemic to China and mainly occurred in subtropical region (Zhang and Yin, 1984; Yin, 1999).

During the soil fauna survey of Northwestern China in 2006, plenty of specimens of Eosentomids were collected from Shaanxi Province. Among them, one species was identified and described as new to science.

2 Material and Methods

The specimens were collected by using Tullgren funnels. All specimens were mounted on the slides using Hoyer's medium and dried for three days in an oven at 60 ℃. Specimens were identified and described under the Nikon phase contrast microscope (E600). Type specimens are deposited in Shanghai Entomological Museum (SEM), Institute of Plant Physiology & Ecology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences.

3 Abbreviations

aa: anterior additional seta. d: dorsal sensillum. l: lateral sensillum. m: middle seta. p: posterior seta. pa: posterior additional seta. r: rostral seta. sr: subrostral seta. sp: subposterior seta. Other abbreviations: see the paper of Bu and Yin (2007).

4 Discussion

Eosentomata Yin, 1996
Eosentomidae Berlese, 1909
Anisentominae Yin, 1983

***Neanisentomon shaanicum* sp. nov.** (Figs 1 - 12)

Holotype ♀ (intact, mounted in Hoyer solution) (No. S06100), from broad-leaved forest on Mt. Cuihua (33°59′N, 109°01′E; alt. 1 300 m), Xi'an, Shaanxi Province, China, 8 June 2006, collected by Dr. LUAN Yun-Xia, GAO Yan and BU Yun. Paratypes: 1 ♀ (No. S06101), 1 ♂ (No. S06102), same data as holotype.

Description. Adult. Body length 750 - 956 μm (n=3).

Head. Oval, length 97 - 100 μm, width 73 - 75 μm. Cephalic setae short. Subposterior seta 1.1 × length of posterior seta. Anterior additional and posterior additional setae also present (Fig. 1). Pseudoculus circular, width 8 μm. PR = 11 - 14. Clypeal apodeme distinct. Rostral setae alate, subequal to subrostral setae (Fig. 2). Mandibles with three distinct apical teeth (Fig. 3). Maxillary palpus with two subequal sensilla (Fig. 4). Digits of galea well-developed, median and inner equal, shorter and thicker than outer digit.

Thorax. Chaetotaxy shown in Table 1. Tracheal camerae short and broad, slim at the apex. Spiracle diameter 5 - 6 μm (Fig. 5). On mesonotum and metanotum, *P*1*a* setiform, situated posterior to the row of *P*1 and *P*2, *P*2 relatively long, length ratio of *P*1: *P*1*a*: *P*2 on mesonotum as 1.2: 1.0: 1.4. Three little setae present on the lateral pleuron between pronotum and mesonotum. Metanotum with very short setae *P*5*a* and *P*5*a'*, *P*5*a* adhere to *P*5 (Fig. 8). Sternites of thorax without pores.

Foretarsal length (Figs 9 - 10) 65 - 69 μm, claw length 12 μm, TR = 5.5 - 5.8; empodium subequal to claw, EU = 1.0; dorsal sensillum *t*-1 short, spindle-like,

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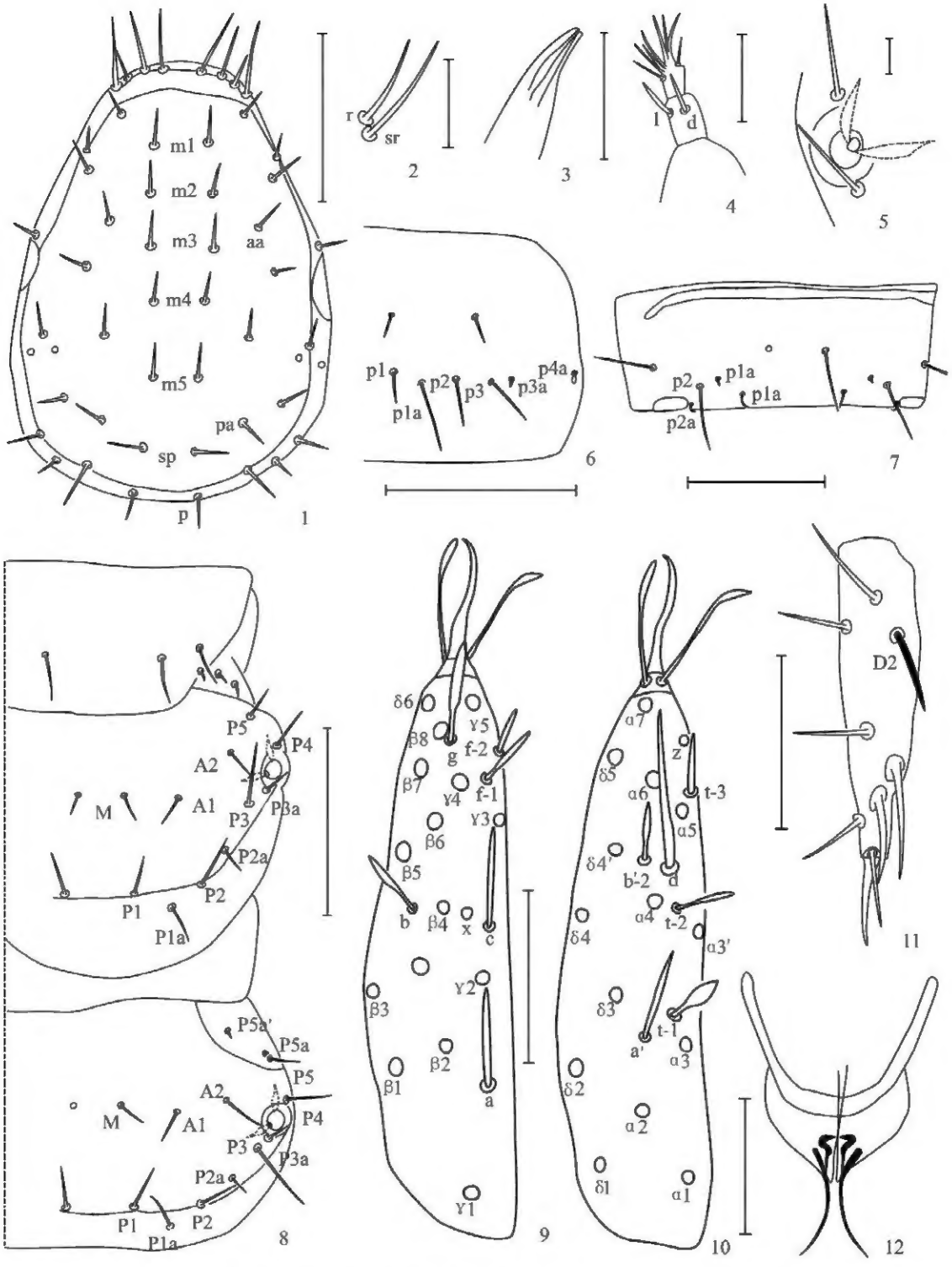

Figs 1 – 12. *Neaniseutomon shuanicum* sp. nov. 1. Head, dorsal view. 2. Rostral (r) and subrostral (sr) setae. 3. Mandible. 4. Maxillary palpus. 5. Spiracle. 6. Urotergite I. 7. Urotergite Ⅷ (holotype). 8. Part of pronotum, mesonotum and metanotum. 9. Foretarsus, exterior view. 10. Foretarsus, interior view. 11. Tarsus Ⅲ. 12. Female squama genitalis. Scale bars: 1, 6 – 8 = 50 μm, 2 – 4 = 10 μm, 5 = 5 μm, 9 – 12 = 20 μm.

closer to α3 than to α3′, BS = 0. 75 – 0. 96; *t*-2 short, clavate; *t*-3 short, linear. Exterior sensilla *a* and *c* slim, subequal to each other; *b* short, spatulate, slightly surpassing base of β5; *d* broad at base and extremely long, its apex reaching base of α7; *e* absent; *f*-1 short, spatulate at the end; *f*-2 short, linear; *g* spatulate; Interior sensillum *a*′ robust, borad in the middle; *b*′-1 and *c*′ absent; *b*′-2 short and spatulate. Middle tarsal length 33 – 35 μm, claw length 8 – 9 μm. Hind tarsal length 40 – 41 μm, claw length 10 μm.

Table 1. The chaetotaxy of *Neanisentomon shaanicum* sp. nov.

	Dorsal		Ventral	
	Formula	Composition of setae	Formula	Composition of setae
Thorax				
Ⅰ	4	1, 2	$\frac{6-2}{6}$	*A*1, 2, 3, *M* *P*1, 2, 3
Ⅱ	$\frac{6}{16}$	*A*2, 4, *M* *P*1, 1*a*, 2, 2*a*, 3, 3*a*, 4, 5	$\frac{6-2}{6}$	*A*1, 2, 3, *M* *P*1, 2, 3
Ⅲ	$\frac{6}{20}$	*A*2, 4, *M* *P*1, 1*a*, 2, 2*a*, 3, 3*a*, 4, 5, 5*a*, 5*a*′	$\frac{6-4}{8}$	*A*1, 2, 3, *M*1, 2 *P*1, 1*a*, 2, 3
Abdomen				
Ⅰ	$\frac{4}{12}$	*A*1, 2 *P*1, 1*a*, 2, 3, 3*a*, 4*a*	$\frac{4}{4}$	*A*1, 2 *P*1, 2
Ⅱ－Ⅲ	$\frac{10}{16}$	*A*1, 2, 3, 4, 5 *P*1, 1*a*, 2, 2*a*, 3, 4, 4*a*, 5	$\frac{6}{4}$	*A*1, 2, 3 *P*1, 2
Ⅳ	$\frac{10}{16}$	*A*1, 2, 3, 4, 5 *P*1, 1*a*, 2, 2*a*, 3, 4, 4*a*, 5	$\frac{6}{10}$	*A*1, 2, 3 *P*1, 2, 2*a*, 2*a*′, 3
Ⅴ－Ⅵ	$\frac{8}{16}$	*A*1, 2, 4, 5 *P*1, 1*a*, 2, 2*a*, 3, 4, 4*a*, 5	$\frac{6}{10}$	*A*1, 2, 3 *P*1, 2, 2*a*, 2*a*′, 3
Ⅶ	$\frac{6}{16}$	*A*2, 4, 5 *P*1, 1*a*, 2, 2*a*, 3, 4, 4*a*, 5	$\frac{6}{10}$	*A*1, 2, 3 *P*1, 2, 2*a*, 2*a*′, 3
Ⅷ	$\frac{6}{8\ (9)^*}$	*M*2, 3, 4 *P*(*c*), 1*a*, 1*a*′, 2, 2*a*	$\frac{2}{7}$	*A*1 *Pc*, 1, 1*a*, 2
Ⅸ	8	1, 2, 3, 4	6	1, 2, 3
Ⅹ	8	1, 2, 3, 4	6	1, 2, 3
Ⅺ	4	3, 4	8	1, 2, 3, 4
Ⅻ	9		12	

* Posterior seta *Pc* absent in holotype (No. S06100), present in paratype (No. S06101, S06102).

Empodia of middle tarsi and hind tarsi long. Basal seta (seta *D*2) of hind tarsus as spine shape (Fig. 11).

Abdomen. Chaetotaxy shown in Table 1. Abdominal tergite Ⅰ with 2 pairs of anterior setae (*A*1, *A*2), with 6 pairs of posterior setae (*P*1, *P*1*a*, *P*2, *P*3, *P*3*a*, *P*4*a*), *P*3*a* and *P*4*a* specialized as short sensillum-like, similar to that of *E. xingjiangense* Bu *et* Yin, 2007 (Fig. 6). Urotergites Ⅱ－Ⅳ with 5 pairs of anterior setae, Ⅴ－Ⅵ with 4 pairs of anterior setae (*A*1, *A*2, *A*4, *A*5), Ⅶ with 3 pairs of anterior setae (*A*2, *A*4, *A*5). Seta *P*1*a* on urotergites Ⅰ－Ⅵ long, longer than *P*1; *P*2*a* on urotergites Ⅱ－Ⅵ subequal to *P*1*a*, short on urotergite Ⅶ. *P*1*a*′ on urotergite Ⅷ as sensillum-like, slightly near to *P*2 than to *P*1*a*, *P*2*a* short and curved, *Pc* absent in holotype (No. S06100) (Fig. 7), present in paratype (No. S06101, S06102). Urosternite Ⅷ with one pair of anterior setae and 7 posterior setae, Ⅸ and Ⅹ with 3 pairs of setae respectively. Urosternites Ⅸ and Ⅹ with single medial pore each, Ⅺ without pores. Segment Ⅻ with two anterior medial pores on tergite and one medial pore on sternite.

On female squama genitalis, caput processus as duck-head shape and curved towards the median edge of stylus, filum processus slim and long (Fig. 12).

Etymology. The species is named after the short name of Shaanxi Province (Shaan) where the type specimens were collected.

Distribution. China (Shaanxi).

Diagnosis. *Neanisentomon shaanicum* sp. nov. is characterized by the sensilla on foretarsus which with extremely long sensillum *d*, sensilla *b*′-1 and *c*′ lacked, and the chaetotaxy of urotergites, seta *A*3 lacked on Ⅴ－Ⅵ, setae *A*1 and *A*3 lacked on Ⅶ, female squama genitalis with distinct caput processus as duck-head shape. It can be distinguished from other species from the chaetotaxy of metanotum, urotergites Ⅴ－Ⅶ and Ⅺ, urosternites Ⅸ－Ⅹ, length of sensillum *d* on foretarsus and female squama genitalis.

Remarks. The chaetotaxy of urotergite Ⅷ of *N. shaanicum* sp. nov. is varied, e. g., *Pc* absent in holotype (6/8), but present in paratype (6/9) which is similar to the species of genus *Pseudanisentomon* Zhang *et* Yin, 1984. The female squama genitalis with distinct duck-head like caput processus is also similar to *Pseudanisentomon*. But the lack of sensilla *b*′-1 and *c*′ on foretarsus was only occurred in few species of genus *Pseudanisentomon*, on the contrary, it is very common in genus *Neanisentomon*. Also, simultaneously lacking of setae *A*1 and *A*3 on urotergite Ⅶ was never occurred in *Pseudanisentomon*. So we place present new species in genus *Neanisentomon*.

The four known species of the *Neanisentomon* can be distinguished by the following key.

Key to the world species of the genus *Neanisentomon* Zhang *et* Yin, 1984.

1. Urosternites Ⅸ and Ⅹ with 4 setae respectively ····· 2
   Urosternites Ⅸ and Ⅹ with 6 setae respectively ····· 3
2. Urotergite Ⅶ with 3 pairs of anterior setae (A2, 4, 5) ····· ***N. guicum* Zhang *et* Yin, 1944**
   Urotergite Ⅶ with 4 pairs of anterior setae (A1, 2, 4, 5) ····· ***N. yuenicum* Zhang *et* Yin, 1984**
3. Sensillum *d* on foretarsus broad at the base, reaching base of seta α7; *b*′-2 present ····· ***N. shaanicum* sp. nov.**
   Sensillum *d* on foretarsus normal, reaching base of *t*-3; *b*′-2 absent ····· ***N. tienmunicum* Yin, 1989**

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中国陕西省新异蚖属一新种记述（原尾纲，古蚖目，古蚖科）

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摘 要 记述了采自陕西省翠华山的新异蚖属 1 新种，即陕新异蚖 *Neanisentomon shaanicum* sp. nov.。新种主要特征为：前足跗节感器 *b*′-1 和 *c*′缺失，感器 *d* 极长大；腹部第Ⅴ～Ⅵ节背板缺少前排刚毛 *A*3，毛序为 8/16，第Ⅶ节背板缺少前排刚毛 *A*1 和 *A*3，毛序为 6/16；雌性外生殖器具有明显的鸭头状的头片。该新种可以通过前足跗节感器 *d* 的长度和雌性外生殖器等特征与已知种类区分。文中同时列出了新异蚖属的世界种类检索表。

关键词 原尾纲，古蚖科，新异蚖属，新种，中国.

中图分类号 Q969.11